Event Internal Pluractionality in Modern Hebrew: A Semantic Analysis of One Verbal Reduplication Pattern

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0. Introduction

Pluractionality (in Newman's 1990 terminology, and henceforth), or, as it is sometimes called, *verbal plurality*, is the phenomena where a certain derivational morphological marking on a verb (gemination, affixation, and many times partial or full reduplication), indicates that the event denoted by this verb is, in some sense, pluralized: repeated in time, distributed in various locations, holds of many participants, etc.

Although, in contrast to nominal number, pluractionality is less widely studied (see e.g. Corbett 1991), there are reports on a wide variety of languages where this phenomenon is attested: Many languages of North America and West Africa, Dravidian languages, some languages of the Caucasus and South America, some Romance languages (like Latin, Italian and French) [1], Slavic languages, and American Sign language. As for Semitic languages, it has been explicitly argued (e.g. Kouwenberg 1997), that gemination with the D-stem in Akkadian expresses pluractionality. More generally, Greenberg 1991 suggests that the *piel* template in a variety of Semitic languages, e.g. Iraqi Arabic, Arabic of Oman and Zanzibar, Hebrew, Aramaic and Akkadian, often expresses various types of pluractionality.

Historically speaking, pluractionality has been discussed a lot in the typology and morphology literature, and in various works describing the individual languages. From the semantic point of view, Cusic's 1981 seminal work is perhaps the most significant attempt to organize the wide range of readings associated with pluractional markers, using several interacting parameters (cf. also Dressler 1968, Durry 1988, Corbett 1991, Bybee 1985). Nowadays pluractionality has become a focus of interest in the more formal semantic literature, as in Lasersohn 1995, Filip & Carlson 2001, Yu 2003, van Geenhoven 2004, 2005, Laca 2004, Wood 2007, Tovena & Kihm 2008 and Faller 2008. These works mainly attempt to reduce the wide variety of pluractional interpretations, as well as Cusic's parameters, to a more precise and unified characterization, which can be integrated into current theoretical assumptions concerning event based semantics and the semantics of plurality. Although there are still open questions to be answered, and although some of

[1] Though for these languages the reports are more scattered, and it is not clear to what extent pluractionality is as systematic and productive as in the other languages mentioned.

Cusic's original readings and parameters are not yet captured within these formal definitions, this direction has proved very fruitful for a better understanding of pluractionality cross-linguistically.

This paper studies a certain verb class in Hebrew in light of this latter approach. I propose that while pluractionality cannot, in fact, characterize the Hebrew *piel* template as a whole (unlike Greenberg's 1991 suggestion), it *can* be used to account for a variety of facts concerning a subclass of the *piel* template, namely a class of quadrilateral[2] reduplicated roots (called the QRR class henceforth), of the $[c_1]i[c_2][c_1]e[c_2]$ form (e.g. *zimzem* ('hummed') or *nifnef* ('flapped', 'wave')). This class of verbs was intuitively characterized (in Ussishkin 1999, Tobin 2001, Schwarzwald 2003, 2004) as expressing 'durativity', 'repetition' or 'iteration'. The goal of this paper is to examine to what extent these intuitions can be implemented within the cross-linguistic, and in particular the formal-semantic, picture of pluractionality. The main claim made in this paper is that despite (a) the existence of many verbs in this construction for which the 'repetition' intuition is not clear, or even missing altogether and (b) the fact that the majority of these reduplicated verbs do not have simplex counterparts, the QRR class in Hebrew should be nonetheless considered pluractional, and more specifically, as expressing *event internal pluractionality*, in the original sense of Cusic 1981, as more formally captured in Wood 2007 and Tovena & Kihm 2008.

In addition to a better understanding of the Hebrew data, the analysis proposed in the paper has more general implications for the cross-linguistic semantic study of pluractionality. In particular the examination of the Hebrew data supports Wood's 2007 and Tovena & Kihm's view of event internal pluractionality, over Lasersohn's 1995 view, questions van Geenhoven's 2004, 2005 claim that pluractionality inherently leads to atelicity, as well as some of Cusic's 1981 claims about event internal pluractional markers. In addition, the examination of the Hebrew data highlights some of the open issues and unanswered questions that the study of pluractionality faces, concerning in particular some of the readings associated with pluractionality which haven't been integrated into the formal theories so far.

The paper is structured as follows: Section 1 describes some previous observations concerning the morpho-semantics of the QRR verbal class, and points out some limitations of these observations. Section 2 provides a background on pluractionality, focusing on the main semantic theories which will be relevant for the analysis of the data. In section 3 I turn back to the Hebrew data and show that (a) pluractionality does not seem to characterize the Hebrew *piel* template in general (b) pluractionality does seem to characterize a subclass of the *piel* verbs, namely the QRR class, and (c) several properties of this verb class support its more precise characterization as

[2] The term 'quadrilateral' is taken from Doron's 2003 characterization of this verbal class.

expressing event internal pluractionality, in the sense of Wood 2007 and Tovena & Kihm 2008. Section 4 discusses some general implications of the paper for the study of pluractionality, and raises some questions for further research. In particular it examines QRR verbs which do not seem to have pluractional semantics, and makes a preliminary suggestion to characterize the core semantic component underlying the reduplication in the QRR class in terms of a diminution operation. Section 5 summarizes the paper.

1. The QRR - *[c_1]i[c_2][c_1]e[c_2]* - verb class in Hebrew: Some preliminary observations.

The *piel* template in Hebrew, one of the three 'active' verbal templates found in Semitic languages (e.g. Arabic, Syriac Akkadian, see e.g. Greenberg 1991, Kouwenberg 1997), is a highly productive template, morphologically marked by an implicit reduplication (gemination) of the middle consonant, and traditionally referred to as the 'intensive' template.[3] This paper focuses on the semantics of a certain subclass of the *piel*, namely verbs with quadrilateral, reduplicated roots[4] (QRR), like *tiftef* ('dripped'), *gimgem* ('stuttered, 'stammered') and *hivhev* ('flickered').[5] As seen in these three examples, all of these verbs are morphologically of the form [c_1]i[c_2][c_1]e[c_2]. There are more than 100 verbs in this class.

Ussishkin 1999 takes the verbs in this sub-class to involve "total reduplication". Doron 2003 calls them 'reduplicated binary roots'. These terms seem clearly justified in many cases like *nimnem* ('dosed', ' took a nap'), *ziçazeça* ('shook') or *tiçateça* ('deceived'), which seem to be reduplications of the binary *nam* ('slept'), *za (*'moved'), and *taça* ('wondered, went astray'), respectively. We also find cases where the quadrilateral verbal roots seem to be reduplications of binary *nominal* or *adjectival* roots like *difdef* ('turned pages'*), hidhed* ('echoed'), *lixle'ax* ('moistened') and *dildel (*'weaken, impoverish'), which seem related to the nouns *daf* ('a page') and *hed* ('echo') and to the adjectives *lax* ('humid') and *dal* ('poor'), respectively. Notice also that there are cases where the quadrilateral root does not reduplicate a binary, but in some way a ternary root, e.g. *picpec* ('shattered, broke to small pieces') seems related to the ternary root *[p][c][c]*, as in *pocec* ('blow up'), and *bilbel* ('confused') seems to be related to *[b][l][l]*, as in *balal* ('mixed'). Note also that

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[3] But see section 3.1 for a discussion of this term.

[4] One other kind of quadrilateral reduplicated *piel* verb class, which has the form [c_1]i[c_2] [c_3]e[c_3] class (e.g. *cixkek* ('giggled'), *išrer* ('ratified'), *sirtet* ('sketched') and *šiklel* ('weighed, balanced')), seems to be associated with a 'repetitive' component as well (see e.g. Tobin 2001 and Schwarzwald 2003, 2004). I postpone the examination of this reduplicated form, and the comparison with the QRR class, to further research.

[5] Most of these quadrilateral roots can also yield derived nominals (*micmuc* ('a blink'), *tiltul* ('a shake'), *gilgul* (' a roll')), and some of them can also yield verbs in the *hitpa'el* template, such as *hitgalgel* ('rolled'), *hitmarmer* ('became embittered') or *hitravrev* ('boasted'). In this paper, however, I confine myself to examine only past tense *piel* verbs created from these roots.

some newer QRR words seem to have been formed by reduplication from loaned words. E.g. *nišneš* ('snacked, repeatedly ate small quantities') seems to be based on the Yiddish noun *naš* ('snack') and *zipzep* ('changed channels') seems like a reduplication of the English *zap*.

However, along these cases there are also many cases, in fact the majority of this verb class (around 70%), where the quadrilateral root does not seem to be related to any existing binary or ternary form. Examples for such cases are *girger* ('gurgled'), which does not seem to be semantically related to e.g. *gar* ('lived'), or *garar* ('dragged'), *rišreš* ('rustle'), which is not semantically related to *raš* ('poor') and *birber* ('gibbered, chattered') which is not related to *berer* ('inquired'). Moreover, there is a significant number of these quadrilateral roots for which no corresponding binary root seems to exist at all, for example *himhem* ('hum') (**ham*), (**lam*), *pišpeš* ('looked for something quickly and repeatedly') (**paš*), *pitpet* ('chattered, babbled') (**pat*), or *tite* ('swept') (**ta / *te*).

Turning now to the morpho-semantic side, Ussishkin claims that "the morphological / semantic content contributed by the reduplicative morpheme signifies either repetitive or durative action" (p 430) and cites the pairs in (1) to support this claim:

(1)

hed 'echo' - *hidhed* 'to echo'

nam 'sleep' - *nimnem* 'to doze'

daf 'page' - *difdef* 'to turn pages'

kav 'line' - *kivkev* 'to draw a dotted line'

pax 'jar, vessel' - *pixpex* 'to flow, to gush' (example # 79)

A similar claim is made in Tobin 2001, who argues that this reduplicated verbal form is iconic, in that its reduplicated form semantically indicates repetition, or iteration.[6] Similarly, Schwarzwald 2003, 2004 considers reduplication of the QRR class to be related to repetition or continuity. She explains this correlation by noting that a large number of verbs in this class are onomatopoeic, for example *[g][a][g][a]* ('to quake'), *[t][r][t][r]* ('rattle' 'hassle'), *[m][l][m][l]* ('mumble, babbled'), *piçapeça* ('bubble', diffuse'), *xirxer* ('groan'), and *tiktek* ('ticked'). Schwarzwald explains that "imitations of nature's sounds are monosyllabic. Reduplication is what gives the word the aspect of repeating the sound….For the Hebrew speaker the falling drop sounds like *tif*. Reduplicating the consonants yields the continuity aspect of 'dripping' " (p. 259, my translation from Hebrew).

[6] There are also other, non-reduplicated verb classes which tend to express iteration or repetition, such as some *hitpa'el* verbs noted in Doron 2003 e.g. *hithalex* ('walked here and there'), *hitrocec* ('ran here and there'). These will not be dealt with in the present paper.

However, although Schwarzwald is right that many reduplicated forms are onomatopoeic, the majority of these verbs are not onomatopoeic in any sense. Here are some examples:[7]

(2) *bilbel* ('confused'), *digdeg* ('tickled'), *difdef* ('turned pages'), *dišdeš* ('trudged'), *hivhev* ('flickered'), *hinhen* ('nodded'), *zigzeg* ('zigzagged'), *ziçazeça* ('shook, shocked'), *tiltel* ('shook, moved (something) from side to side'), *kirker* ('pranced, jumped'), *ligleg* ('mocked'), *micmec* ('blinked'), *nidned* ('swung' or 'nagged'), *niçaneça* ('shook'), *nifnef* ('waved'), *nicnec* ('glittered'), *nišneš* ('snacked on'), *çilçel* ('browsed'), *çifçef* ('blinked'), *pirper* ('fluttered, quivered'), *kivkev* ('drew a dotted line'), *rifref* ('fluttered'), *tiçateça* ('deceived')

The claim that this verb class expresses 'durativity', 'repetition', or 'iteration' is problematic as well (as also noted in Bat-El 2006). It is indeed supported by verbs as in (1) above, as well as by many other verbs (see section 3 above for more examples). However, a close look shows that along these 'repetitive' examples, we also find verbs for which the 'repetition' component is (a) optional, (b) less clear or (c) missing altogether. Let us look at some examples.

For some verbs in the QRR class repetition is just an optional semantic component. An example is the verb *picpec* ('shattered') and the similar, (though the much more rarely used) *xitxet* ('made many holes'). The events denoted by these verbs, can, but need not involve repetition (One can shatter something in one move, and can even make many holes in one activity). The verb *nimnem* can denote a sequence of sleeping and waking up events, but also merely a light and short sleep, which does not involve repetition. Similarly, the *verb hirher* and the non-reduplicated verb *xaSav* can be both translated as 'thought', but the former expresses a somewhat lighter, possibly shorter or less deep kind of thought than the latter, and not necessarily a repeated activity of thinking. An important subclass is instantiated by semelfactive verbs, many of which are members of the QRR class, like *nifnef* ('fluttered', 'waved'), *hinhen* ('nodded') and *micmec* ('blinked'). Like their counterparts in other languages, these are verbs which are systematically ambiguous between an 'activity' reading, denoting a series of repeated events, and an equally natural reading expressing single and short events (see e.g. Smith 1991, Rothstein 2004). For them too, then, 'repetition' seems optional.

In other cases the terms 'repetition', 'duration' or 'iteration' do not seem to fully characterize what is unique about these QRR verbs, relative to their non-reduplicated counterparts. For example, comparing the verbs *zimzem* or *himhem* ('hummed') to the non-reduplicated verb *šar* ('sang'), we can

[7] Schwarzwald's general claim about reduplication in Hebrew (which concerns reduplication in the verbal, nominal and adjectival domain) is indeed that correlations between form and meaning in such forms usually work for a minority of the examples only.

see that what is special about these verbs is not necessarily the 'repetition' component, since singing can also be said to involve repetition or continuation (of music sounds). The reduplicated *milmel* ('mumbled'), or *birber* ('gibbered, chattered') can be said to involve repetitive production of speech sounds, but it is not clear in what sense they are more repetitive than the non-reduplicated *diber* ('talked'), which usually involves repetitive production of speech too. Similarly, the reduplicated verb *dišdeš* ('trudged') is not necessarily more 'repetitive' than its natural, non-reduplicated counterpart *halax* ('walked'), which involves repetitive short events of making steps.

Finally, many members of the QRR class (about 20%) do not seem to involve repetition in any clear sense. Examples of such verbs are *lixlex* ('littered, made (something) dirty'), *pikpek* ('doubted') *bicbec* ('peeped out, sprouted'), *zilzel* ('disrespected, took (something) lightly'), or *tiçateça* ('deceived'). Of course, one *can* repeatedly make something, or someplace dirty, or repeatedly disrespect or deceive someone, but this is true for most verbs in natural language: One *can* meet Mary, dance, enter the room or speak about the importance of being a good linguist, repeatedly, and combining such verbs with adverbials like *twice, several times,* or *repeatedly* triggers such repetitive or frequantive interpretations. Crucially, however, repetition is not an inherent part of the lexical semantics of such verbs. In Hebrew too, the reduplicated form of the verbs just mentioned is not enough by itself to trigger such repetitive meanings.

To summarize the observations so far, in the QRR verb class only a minority of the verbs are really *reduplications* of existing roots. The majority of verbs in this class *can* naturally express repetition, but only for some of them this seems a necessary, clear and prominent component of their lexical semantics. For others, repetition seems to be optional (as with the semelfactives), and still for other verbs the nature and prominence of this component is more vague, or at least, does not clearly distinguish them from their non-reduplicated counterparts. Finally, the meaning of many QRR verbs does not seem to involve repetition or iteration in any clear sense.

The emerging picture, then, is quite varied, and does not seem to take us very far. I believe, however, that using a different characterization, namely *pluractionality*, instead of *repetition,* or *iteration*, we can reach a better understanding of the form-meaning correlation in this verb class. As we shall see below, one advantage of a 'pluractionality-based' analysis of the Hebrew QRR class is that it is inherently more flexible than a 'repetition-based' analysis, since it allows variability in other domains besides the temporal one. In fact, characterizing the QRR verbs as pluractional will enable a natural integration of the 'repetition' observations into the analysis of this class. 'Repetition' will simply be viewed as a special case of pluractionality. Another advantage has to do with the striking similarity between the meanings expressed by many verbs in the QRR class, and typical meanings of pluractional verbs cross-linguistically.

Let me thus turn to review cross-linguistic reports of pluractionality and look at the way this phenomenon was analyzed in several formal semantic theories. In section 3 I will come back to the Hebrew data and show that pluractionality, and more precisely *event internal pluractionality,* is indeed a productive tool for characterizing the QRR verb class.

2. Background: The semantics of pluractionality cross-linguistically

2.1 A wide variety of pluractional meanings.

As mentioned above, verbal plurality, or pluractionality, indicates through various derivational morphological means that the event in the denotation of the verb is, in some sense, pluralized. The main challenge for a semantic theory of pluractionality is the clarification of the expression 'in some sense' in this context. This is because the pluralization of the event can be manifested in a strikingly wide variety of ways. The variability is witnessed not only cross-linguistically, but many times within the same language, and even with the same pluractional marker. In some cases, a pluractional marker can also lead to other semantic effects which are not in any obvious way related to plurality of the event.

Even a brief glance at some recent papers on pluractionality easily yields examples illustrating this kind of variation: According to Houser et al 2006, reduplication in Oregon Northern Paiute marks pluractionality in two ways: either as distributivity among participants or as iterativity in time. In Mono Lake Paiute the suffix *–zagati* indicates iterativity in time, whereas *–bodoti* indicates that the event is repeated in different locations (e.g. *quiba* 'hit' vs. *quiba-bodoti* 'go back and hit'). According to Filip and Carlson 2001 the prefix *po-* in Czech creates distributive readings from (potentially) collective readings (e.g. *scovaly* 'hid, collectively or distributively' vs. *po-scovaly* 'hid distributively'), but it can also indicate "low frequency…low intensity, short duration, tentativeness, insignificant effort, or result of the denoted subevents…(as in) *pokçrikovat* 'to cry out a few times', *pobolívat* 'to hurt a little now and then'", or distribution in space (meaning roughly 'here and there'). However, Carlson and Filip observe, *po-* can also have other, non-distributive readings, e.g. it can express attenuative / diminutive readings, related to a relatively small measure or degree (as in *pospat si* 'to sleep for a short while')". Faller 2008 reports that the pluractional marker *–paya* in Cuzco Quechua, can have a 'frequantive' reading (e.g. *much'a-paya* 'kiss frequently' vs. *much'a* 'kiss'). However, in addition, *-paya* can have 'idiomatic' readings, which do not seem to be related to plurality, such as *rima-paya* 'put an important issue to someone, offend through words' vs. *rima* 'speak', or *kusi-paya* 'laugh at someone, say 'well done' vs. *kusi* 'sad'. Cusic 1981 summarized observations like these in the following way:

"…the pluractional verb… may serve to indicate not only the repetition of an action…but a whole range of other plural meanings: repetitiveness, repeated occasions and events, persistence consequences, habitual agency, distributed quality, incohativity, cumulative result, intensity, plurality of sites of action, duration, continuity, conation, distribution, elerativity/reterdaricity, augmentation, diminution. The plural verb shows, as well, certain relations we would not be likely to associate with event plurality at all…(p.74)

In the next subsections I will review several attempts to reduce the apparent arbitrariness and variability of the range of readings associated with pluractionality, and to arrive at a more unified picture. I will concentrate on those theories which will prove most productive for the analysis of the Hebrew data above. I will start with Cusic's 1981 four parameters (section 2.2), continue with Lasersohn's 1995 formalization of Cusic's parameters (section (2.3)), and conclude with some of the ideas in Wood 2007 and Tovena & Kihm 2008, both of which criticized a specific component in Lasersohn's definitions, and offered an alternative (section (2.4)).

2.2 Organizing the wide range of readings in four parameters: Cusic 1981

Cusic attempted to reduce the apparent arbitrariness and variability of the range of readings associated with pluractionality (what he called 'verbal plurality'), by categorizing them in four parameters: the event ratio, relative measure, connectedness and distribution parameters. I will now briefly review these parameters, concentrating on the readings which will be most relevant for the discussion of the Hebrew data below.

The event ratio parameter distinguishes two main pluractional readings, which Cusic calls 'repetitive' and 'repeated'. These two readings correspond to Cusic's theoretical distinction between *event internal*, and *event external* plurality, respectively, and I will henceforth use these latter terms. According to Cusic, event internal plurality is found when "a single event on a single occasion consists of internal phases", whereas event external plurality is witnessed when "a single bounded event (internally plural or not) is repeated on a single occasion" or when "a single bounded event is repeated on different occasions" (p. 67).

For example, Cusic takes the English *The mouse nibbled the cheese* to express event internal plurality: A single event of nibbling consists of repetition of *phases*, i.e. of small biting phases. But the whole nibbling event can be plural as well, as in *The mouse nibbled the cheese again and again*, and then we get event external plurality.[8] As examples of pluractional markers

[8] Cusic suggests that external plurality can operate not only on the event (and yield many events in one occasion), e.g. many nibbling events in one Thursday , as in (i), but also on the level of the occasion (yielding many occasions with one event per occasion, e.g. many Thursday occasions), as in the prominent reading of (ii).

(i) The mouse nibbled the cheese again and again on Thursday

(ii) Again and again the mouse nibbled the cheese on Thursday (p. 65)

expressing event internal plurality, Cusic cites the Klamath reduplicated *petqpetqa* '(he) blinks' vs. *petq-* 'close the eyes' (from Barker 1964: 120), or the German *flattern* 'fly uncertainly with many flaps' vs. *fliegen* 'fly' (from Hanckel 1930: 11). In contrast, event external pluractional markers are exemplified in the reduplicated Nahuat verb *cuicuica* 'sing many times' vs. *cui-* 'sing' (from Garibay 1961: 30), or the Kanuri *k*k*nin* 'to tie up in often', vs. *k*rnin* 'to tie up in' (from Lukas 1967: 105).

The relative measure parameter indicates the size of the unit of action, the degree of effort involved, its success or failure, etc. (with event internal pluractionals), and 'small or precise counts of the event' vs. 'large or indeterminate counts' (with event external pluractionals).

Here are some relevant readings which result from specification of this parameter:[9] The *diminutive* reading indicates that "the repetition decreases the size or importance of the units of the action, as if to keep a constant overall quantity while increasing the number of parts" (p. 81-82), as in the Sierra Nahuat *kokočisneki* 'constantly wants to catch little naps' vs. *kočisneki* 'wants to sleep' (from Key 1960:131). In contrast, the *tentative* reading decreases the amount of expected degree of effort. It indicates that "the action is performed half-heartedly or with less effort than expected. The idea of repetition is not always evident here, but the action is confined to a single inconclusive event on an occasion" (p. 82-83), as in the Quileute *ciye:gol* 'he pulled a little' vs. *ce:gol* 'he pulled' (from Andrade 1933/38: 190). The *conative* reading indicates repetitive action which falls short of producing some desired result as in the Saho *barrar* 'to flutter, i.e. to flap the wings in the effort to fly' vs. *barar* 'to fly' (from Tauli 1958: 141). A closely related reading is the *incassative*, which indicates "a kind of repetitive plurality in which there is no attempt to do anything in particular, merely an aimless or undirected activity" (p. 83-84), as in the Zoque *witwitnay* 'to walk aimlessly' vs. *wit* 'to walk' (from Wonderly 1951: 157). Other readings express 'increase', like the *intensive* reading, indicating "increased effort or increased quantity of the action" (p. 84), as in the Arabic kassara 'He smashed (something) (i.e. by repeated or forceful blows)' vs. *kasara* 'He broke (something)' (from Wehr 1976: 826), or the *augmentative*, where "the amount of activity increases and possibly also the amount of 'substance' implied as being acted upon" (p. 85).

According to Cusic, with event external pluractionality we may get some readings where the number of repetitions is precisely two. For example, we find the *duplicative* reading, where "a single action is repeated once on the same or different occasions' (p. 89) (as in the Zoque *minge?tu* 'He came a second time' or 'He (another) came also' vs. *min-* 'come'), the *alternative* reading, where

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However, Cusic suggests to reduce 'event plurality' and 'occasion plurality' to one category of 'repeated' readings or 'external plurality', since "in general, the two meanings are available as interpretations of a single form" (p. 79). I will follow him in this point, and only distinguish event internal from event external pluractionality.

[9] Cusic credits Dressler 1968 for many of the category labels he uses (though not for his system of classification).

"two distinct actions, one a mirror-image of the other, are performed by the same agent" (p.90), and the similar *reversative* reading, which "usually concerns verbs of motion and indicates return by the original agent along a path to some point of origin" (p. 91).

Cusic's third parameter, the connectedness parameter, specifies "the relative prominence of bounds at the phase and event levels" (p. 96) or the "distinctness of the iterated units of action" (p.99). According to him "All the repetitive [i.e. event internal] types can be considered continuous of connected, since they represent single events, and the repeated [i.e. event external] types discontinuous, since they represent (in some cases) serial events" (p.96).

The final, Distribution parameter concerns "separation in time, space, or some other way of actor from actor, action from action, object from object, property from property, and so on" (p. 102). I.e. it indicates in what sense the event can be considered 'pluralized'. Typically, according to Cusic, with singular participants the event can be distributed in time, whereas with plural ones, it can be taken to be distributed between the different participants.

Cusic makes several generalizations concerning the interaction of the event internal / external plurality distinction with the other three parameters. With respect the interaction with the relative measure parameter, Cusic assumes that "it happens to be the case that in [internal] plurality the index of repetitions is usually considered to be large or uncountable" (p.78), whereas with event external plurality the index can be small and precise (as with the duplicative, alternative and reversative readings). With respect to the interaction with the connectedness parameter, Cusic proposes , as we saw above, that the distinctness between the units of repetition is higher with event external than with event internal pluractionals (i.e. the former are 'less connected' than the latter). Finally, concerning the interaction with the distribution parameter, Cusic assumes that whereas event internal pluractionals tend to express distribution in time, event external ones can also express distribution in space. As we shall see in sections 3 and 4 below, however, not all of these generalizations are equally justified or can be equally independently motivated.

2.3 Formalizing Cusic's parameters: Lasersohn 1995

Cusic's attempt to organize the large number of pluractional readings in his four parameters clearly leads to a better understanding of pluractionality than the more scattered reports before him. However, we are still left with many readings, and the relations between the four parameters is not clear enough. In addition, Cusic's description of some of the readings is often still vague, so it is sometimes hard to determine how to precisely categorize a certain pluractional marker.

Lasersohn 1995 uses Cusic's insights in order to reach an even more unified picture of pluractionality. In addition, Lasersohn's suggestion is defined in more formal and precise terms, so

it is more testable, and can be applied in a clearer way to individual markers. Specifically, Lasersohn proposes a single schema representing the truth conditions of sentences with pluractional verbs, which contain optional clauses specifying the variations along Cusic's parameters.

The proposal is based on several well-established theoretical assumptions concerning the semantics of verbal expressions. Specifically, verbs are treated as predicates of events, and the relations between these events and the arguments of the verbs (e.g. the subject and the direct object) are given by functions assigning the event the thematic roles of the agent or the theme (as in e.g. Parsons 1990). Other functions can assign the event its running time, or its spatio-temporal location. Given these assumptions, for example, sentences like *John kissed Mary at 6* or *John kissed Mary in the garden* will be roughly represented as in (3) and (4), respectively (ignoring tense), where $\tau(e)$ gives the run time (temporal location) of the event, and K(e) its spatial location:

(3) $\exists e$ kiss(e) & Agent(e) = John & Theme(e) = Mary & $\tau(e) \subset$ yesterday

(4) $\exists e$ kiss(e) & Agent(e) = John & Theme(e) = Mary & $K(e)$ = the garden

Lasersohn takes the basic operation of pluractionality to be pluralization over events. Specifically, a pluractional marker (*PA*) combining with a verb (*V*) yields a combination *V-PA* which is true of a plurality of events (a set *X*) iff the corresponding simple verb *V* holds of every event which is a member of this set X. To prevent a situation in which this set of events X is an empty set or a singleton set, Lasersohn requires that the cardinality of the set of events is larger than a pragmatically fixed number *n*, (so the intuition of 'plurality' is captured). Formally:

(5) $V\text{-}PA\ (X) \leftrightarrow \forall e \in X\ [V(e)]$ & **card**$(X) \geq n$

However, as Lasersohn himself notes, this kind of definition does not capture the observations above that 'pluralizing the verb' can be manifested in a wide range of readings, which Cusic classified along his four parameters. Lasersohn proposes to formally capture these parameters by adding several components to the general schema in (5).

To capture the event ratio parameter, Lasersohn proposes that the difference between event internal ('repetitive') and event external ('repeated') plurality is that "repeated action involves multiple events represented by the verb type, while repetitive action involves multiple events of a potentially different sort" (p. 255). For example, in the case of the event internal reading of *nibble*, the subevents are not denoted by nibbling (but by bites), but in the event external reading (as in *He nibbled it again and again*), the subevents are themselves nibbling events. Formally, Lasersohn uses the variable *P* (instead of V) in the characterization of the subevents, and suggests that $P=V$ whenever we have repeated (event external) pluractionality. This is captured in (6):

(6) $V\text{-}PA\ (X) \leftrightarrow \forall e \in X\ [P(e)]$ & **card**$(X) \geq n$ ($P=V$ in cases of event external plurality).

Turning to the distribution parameter, Lasersohn's idea is to use the notion of *non-overlap* to capture the different types of distribution.[10] For example, if a pluractional verb expresses distribution in time, we require that "the events in the set… have non-overlapping running times" (p. 251). Similarly, distribution between participants and between locations is captured by assuming that the values of the thematic roles of the subevents or of their spatio-temporal locations do not overlap, respectively. This is captured in (7), where *f* represents some function specifying one of the aspects of the subevents (running time, thematic role or spatio-temporal location):

(7) $\forall e, e' \in X \neg f(e)\ O\ f(e')$, where "the identity of *f* determines whether the distributivity is temporal ($f = \tau$), spatio temporal ($f = K$), or participant-based ($f=\theta$) (where θ is a thematic relation assigned by the verb)" (p. 256).

To capture Cusic's 'connectedness in time' parameter, Lasersohn suggests to add to (6) and (7) a clause requiring that there is a time interval between the running times of any two subevents in the set, where no event of the V type holds. In contrast the 'continuous' reading is captured by negating such a clause. As for Cusic's 'relative measure' parameter, Lasersohn intuitively suggests that it can be captured by positing "a series of measure functions on events, yielding values based on size, degree of effort, effectiveness, etc… (and potentially)… requiring certain minimum or maximum values for these functions, depending on the specific reading desired" (p. 255).

2.4 Wood's 2007 and Tovena & Kihm's 2008 modification of Lasersohn's definition

Let me describe now two theories – Wood 2007 and Tovena & Kihm 2008 - which criticize a certain component in Lasersohn's definition, namely his treatment of Cusic's event ratio parameter, and which suggest an alternative way to capture this parameter.

As mentioned in the previous section, Lasersohn takes the difference between event internal and external pluractionality to consist only in whether the subevents of the pluralized events are of the same type as those of the pluractional verb (i.e. $P=V$) or not (i.e. $P\neq V$). However, Wood points out that this characterization is unmotivated both theoretically and empirically. Theoretically, it does not follow from Cusic's original intuitive characterization of the distinction, according to which the crucial difference between event internal and external plurality is in whether or not the subevents (the repeated occurrences) make up a *single event* or not (see again section (2.2) above). Given this intuition of Cusic, Wood claims, the question of whether or not P is equal to V not is secondary, and crucially, there is no independent reason which would prevent the subevents of event internal pluractionals (the *phases* in Cusic's terminology) to be equal to *V*. She claims that

[10] This idea is inspired by Lasersohn's analysis of *together* (as in *Mary and John sang together*), as expressing *overlap* of the different aspects of the subevents which constitute the plural event.

> "..there is no apparent reason why an event-internal pluractional may not apply to a verb meaning 'knock' and produce a complex event of knocking with individual knocks as its phases. In fact, this is much like the repetition interpretation of the English progressive when combined with a semelfactive verb, as in *He's knocking on the door,* which seems to create a single complex event of knocking" (p.117).

Empirically, Wood points out that a survey of pluractionality phenomena in 43 languages indeed reveals many cases of event internal pluractionality where $P=V$, as in the event internal pluractionality in Yupik *allguraa* 'he is tearing it up' vs. the simple *alleg-* 'to tear' (from Jacobson 1984: 581). There are, of course, also cases of event internal pluractionals where $P \neq V$. Wood claims that these cases tend to fall into two main categories, namely diminutive and conative.

An additional problematic aspect of Lasersohn's definition is pointed out in Tovena & Kihm 2008. They observe that unlike the subevents of event external pluractionals, the phases of event internal ones are constrained in that they cannot be distributed over participants, and must all hold of one participant (e.g. the small bites phases of *nibble* can only have one agent). Tovena & Kihm argue that this observation poses a problem for Lasersohn's definition, according to which the subevents of the pluractional verb can in principle distribute (not overlap) in their running time, their spatio temporal location or their participants. If the only difference between event internal and external pluractionality is whether or not P=V, as Lasersohn suggests, the 'non-participants-distributivity' constraint on event internal pluractionals is unexplained.

The 'non-participants-distributivity' constraint on event internal pluractionals is also pointed out in Wood's survey. In such pluractionals, Wood observes, the arguments are either singular or interpreted collectively. In addition, Wood points out three more generalizations concerning event internal pluractionality: (a) Verb type: event internal pluractional markers often combine with semelfactive predicates, as well as with (some) achievements. They can also combine with activities, but do not tend to combine with accomplishments.[11] In those cases where accomplishments *do* combine with pluractional markers, they get a conative reading, and their telic point (or the culmination part of the event) is removed. An example is the Latin verb *consulere* 'consult, decide upon', which get the conative reading *consultāre* 'deliberate' when combined with an event internal pluractional marker (from Garret 2001:12). (b) Typical multiplicity: "Events which are typically or inherently repeated are more likely to be construed with event-internal plurality, such as breathing, coughing, knocking or digging" (p. 89-90), and (c) Proximity or continuousness in time: the subevents (phases) are "essentially continuous or have minimal temporal separation" (p.90).

[11] Although there is also a certain type of achievements that such markers do not combine with, namely what Wood calls 'run up' achievements, which, according to her, are similar to accomplishments in denoting complex events as well.

In an attempt to capture Cusic's original intuition, Wood suggests that the difference between event internal and event external pluractionality is not in whether or not *P=V*, as Lasersohn suggests, but in whether or not the pluractional verb denotes a plurality of events, or a *grouped* plurality of events, which turns it, in fact, into a singular predicate. A very similar suggestion is made in Tovena and Kihm 2008. Let me describe here Wood's version of the proposal.

Formally, Wood follows Landman's 1996, 2000 theory of plurality in the domain of individuals and events, according to which a plurality of events (marked with *) can be turned into a singular event once a group operator (↑) is applied to it. Distributive predication, e.g. the distributive reading of (8), in which John and Mary carried the piano separately, manifests plural predication: we have two events, and each has a different agent. In contrast, in collective predication, as in the collective reading of (8), where John and Mary carried the piano as a group, a groupification operator ↑ is applied to both the plurality of events and the plurality of individuals, and we end up with a singular event which has a singular agent – the group of John and Mary.

(8) John and Mary carried the piano upstairs

As for pluractionality, Wood suggests that the event external reading of a verb like *jump* will yield the interpretation in (9), where we get a plurality of jumping events, whereas an event internal reading will yield (10) where we get a group of jumpings, and consequently a *singular* event:

(9) λe. *jump (e) (event external pluractionality: yields a plurality of events)

(10) λe. ↑*jump (e) (event internal pluractionality: yields a group (singularity) of events)

According to Wood, this explains why event internal pluractionals do not express distributivity over their agents: Since such predicates denote groups, and therefore singular predicates, they can only combine with singular agents, whether originally singular (e.g. *John*), or pluralities treated as groups (e.g. the group of John and Mary), which are also considered singular.

Finally, Wood suggests another general constraint on event internal pluractionality:

(11) The phases (subevents) of an event internal pluractional cannot be complex (where 'complex' means 'having both a process and a culmination phase')

According to Wood, this constraint explains her observation that accomplishments, like *build a house* or *write a paper*, which consist of a process phase (an activity part) and a culmination (a telic point), cannot combine with event internal pluractional markers. Wood emphasizes that it is indeed the 'complexity' of accomplishments which is incompatible with this kind of pluractionality, and not their telicity, because, as noted above, event internal pluractionals *can* combine with achievements, which are telic as well. The constraint in (11) also explains why the way to allow a combination of

accomplishments with event internal pluractionals is to make them conative, i.e. to remove their culmination point, and thus turn them into 'single phase', 'noncomplex' predicates.

There is one final advantage of the 'group' analysis of event internal pluractionality, which has to do with their (a)telicity. This advantage is not explicitly discussed in either Wood 2007 or Tovena & Kihm 2008, but I believe it is worth mentioning.

Van Geenhoven 2004, 2005 claims that pluractional verbs are inherently atelic, and that this is due the fact that pluractional markers involve an operation which pluralizes events:

> …pluractionality…is the verbal analog of nominal plurality (see Cusic1981; Lasersohn 1995). Pluractional predicates are like mass nouns (i.e., cumulative) and it is this that makes them unbounded and therefore atelic". (van Geenhoven p.142-3).

It is not clear to what extent what van Geenhoven calls 'pluractionality', and the kind of expressions she discusses (e.g. frequency adverbs like *again and again*), correlate with Cusic's and Lasersohn's notions of pluractionality. But clearly, her claim is incompatible with the existence of many of the examples of event internal pluractional verbs cited by Wood, which seem telic, (e.g. the Yupik *allguraa* 'he is tearing it up' (from Jacobson 1984: 581), the Syrian Arabic *kassar* 'to break (to pieces)', or the Yurok *kich ho* ***yekwo****yekwoh,* which can mean 'I folded it up'). The existence of such verbs would be indeed unexplained if the semantic structure of such pluractionals is the one proposed in Lasersohn or van Geenhoven, i.e. one yielding plural events, where the plurality of a predicate necessarily leads to its cumulatively and thus to its atelicity. On the other hand, the potential telicity of event internal pluractionals is perfectly compatible with an analysis where they denote *singular events*, namely a groupification of a plurality of events, as proposed in Wood and in Tovena & Kihm. In general, then, van Geenhoven's generalization seems apply only to event external pluractionality.

3. The Hebrew data revisited

Having reviewed some central issues in the cross-linguistic manifestation and semantics of pluractionality, we can now turn back to the Hebrew QRR data described in section 1 above. In section 3.1 I first argue that while there is evidence that pluractionality characterizes the *piel* template in several Semitic and Afroasiatic languages, this does not seem to be generally the case in modern Hebrew. In section 3.2 I point out the similarities between the interpretations of a subclass of the Hebrew *piel* template, namely the QRR verb class, and typical pluractional readings reported cross-linguistically. In section 3.3 I examine the frequent absence of morphologically simple counterparts in the QRR class, and offer an explanation for this fact, based on Tovena and Kihm's 2008 discussion of pluractionality in Italian and French. This explanation is the first piece of

support for the more precise characterization of the Hebrew verb class as associated with *event internal* pluractionality, in the sense developed in Wood and in Tovena & Kihm. In section 3.4 I discuss five more facts which can be used to further support this finer grained classification.

3.1 Pluractionality in the *piel* template in Semitic languages and in modern Hebrew.

As mentioned in the introduction, Greenberg 1991 proposed that the *piel* template in Hebrew and its correlates in other Semitic languages, traditionally referred to as the 'intensive' template, mark pluractionality. His main insight is that morphologically the *piel* template involves partial reduplication or gemination, which is a common pluractional marker, and that semantically 'intensivity' is close to pluractionality as well:

> The most common overall characterization of *piel* in grammars of Semitic languages is "intensive". In fact, "intensive" is very close in meaning to "repetitive", a common aspect of verbal plurality. An intensive act is likely to be repeated (e.g. *beat* vs. *hit*). Logically, of course, they are distinct. An act can be repeated in a languid manner, and an intensive act need not be repeated. Intensivity as such has to do with vigor, speed or magnitude or extent of an act. In the real world, of course, intensivity and repetitiveness tend to co-occur so the one is easily connected diachronically or synchronically with the other (p.579).

To support his claim, Greenberg cites examples from Iraqi Arabic, as in *naggab* 'bore many holes' vs. *nigab* 'bore a hole', from Erwin 1963: 65-6, from Arabic of Oman and Zanzibar, as in *geẓẓef* 'cut into many pieces' vs. *geẓef* 'cut off' (from Cowell 1964:253), from biblical Hebrew, as in *qibber* 'to bury many, as after a battle' vs. *qavar* 'to bury' (from Bauer and Leander 1962:281), and from Akkadian, as in *ushebber* 'he broke many' vs. *ishber* 'he broke', (from Ungnad 1964:75, see also Kouwenberg 1997).

However, examining *piel* verbs in modern Hebrew, it is quite clear that Greenberg's suggestion does not hold for this language. Although we can find some *piel* verbs with typically pluractional meanings, like distribution in time, as in *kipec* ('jumped several times') vs. *kafac* ('jumped'), the vast majority of the verbs in this template neither have this reading, nor distribution in the space or participants dimensions. Here are just a few examples illustrating this point:

(12) *tiken* ('fixed'), *šilem* ('paid'), *bišel* ('cooked'), *gidel* ('grew'), *limed* ('taught'), *xilec* ('rescued'), *kidem* ('advanced'), *xibev* ('liked'), *kerer* ('cooled'), *ximem* ('warmed'), *gered* ('scratched'), *nisa* ('tried'), *piteax* ('developed'), *sixek* ('played'), *ʔibed* ('lost')

It is indeed true that many *piel* verbs are semantically 'intensive', but this 'intensivity' does not seem to be related to pluractionality (some pluralization of the event), but to another factor. I follow Doron's 2003 suggestion that what semantically characterizes Hebrew *piel* verbs is that their

external argument (whenever there is such an argument) denotes an actor.[12] This is illustrated in minimally contrasting simple (*pa'al*) - intensive (*piel*) pairs as in (13):

(13) [S]a[v]a[r] 'break' - [S]i[b]e[r] 'actively break', [y]a[c]a[r] 'produce' - [y]i[c]e[r] 'manufacture', [p]a[t]a[r] 'excuse' - [p]i[t]e[r] 'dismiss/fire', [x]a[z]a[ ] 'witness' - [x]i[z]a[ ] 'predict', [x]a[v]a[l] 'hit' - [x]i[b]e[l] 'damage' (Doron 2003, p. 18-19)[13]

But the identification of the external argument with an 'actor', which leads to the 'intensivity' intuition, is not related to 'pluralization' of the event, in any clear way.

In this sense, then, Hebrew seems to differ from several Afroasiatic and Chadic languages like Hausa, in which the correlate of the *piel* template is also characterized as 'intensive'. Such *piel* verbs have been indeed regularly reported to express 'repetitiveness', or distributiveness. Newman 1990 reviews several such reports and concludes that "It seems evident that the essential semantics of this verb form relates more to pluralization than to intensification" (p. 90). This, however, does not seem to be the situation in the Hebrew *piel.* (It might be, then, that using the same 'intensive' label for the *piel* verbs in both Hebrew and the other Afroasiatic languages is misleading.)

I thus conclude that pluractionality should not be considered a general property of the *piel* template in modern Hebrew. I suggest, instead, that this semantic property can help us characterize at least one *subclass* of the Hebrew *piel* template, namely the quadrilateral reduplicated (QRR) class, introduced in section 1 above. Let us turn to justifying this narrower claim.

3.2 The QRR verb class in Hebrew has typical characteristics of pluractional verbs

In section 1 above we saw that although many reduplicated Hebrew verbs express some sort of repetition or iteration, this intuition is not enough to account for the full range of data, since for some verbs repetition is only an option (e.g. semelfactive verbs), for some of them this term is not enough to semantically distinguish them from their non-reduplicated counterparts and in some cases the repetition intuition is missing altogether.

'Repetition' alone, then, did not seem very productive as providing a unified and insightful characterization of the Hebrew QRR verb class. In contrast, given the review in section 2, I suggest that "pluractionality" seems indeed a much better option. This is mainly since the QRR class exhibits many of the typical readings and semantic effects associated with pluractionality, reviewed above, 'repetition' being only one of these readings.

[12] as opposed to the *hif'il* which requires a cause.

[13] Doron notes that such systematic contributions of the intensive template are only expected when the verb is paired with an 'equi-rooted verb'. In contrast, "when a single verb is derived from a root, i.e. when the verb is not paired with another equi-rooted verb, then the contribution of the template is more erratic". (p.23)

In particular, the 'durative' or 'repetitive' intuition in Ussishkin 1999, Tobin 2001 and Schwarzwald 2003, 2004 can be viewed now as a special case of the pluractionality of the QRR verb class as a whole. More precisely, it expresses Cusic's 'distribution in time' reading, defined in Lasersohn as a case where the subevents of the pluralized event have non-overlapping running times. Thus, for example, *rixre'ax* ('sniffed'), *liklek* ('licked several times') and *hivhev* ('flickered') can be taken to denote plural events which have subevents (namely smelling, licking, and 'light-on' eventualities) with non-overlapping running times.

One could say here that in these examples 'distribution in time', namely the non-overlapping time of the subevents, is forced by pragmatic reasons, e.g. the fact that one cannot simultaneously smell something more than once, and a light cannot be simultaneously on and off. However, there are also some verbs, e.g. *tiftef* 'dripped', or *bizbez (kesef)* 'wasted (money)', where distribution in time is not pragmatically forced, but is nonetheless required. (14), for example is felicitous in a situation where single drops fell repeatedly from the pipe over some time, but not where several drops simultaneously fell from a pipe, and no drop was observed falling later on:[14]

(14) ha-cinor tiftef
The-pipe dripped
"The pipe dripped"

Similarly (15) implies that $100 were not spent at once, but in several occasions yesterday:[15]

(15) dani bizbez 100 dollar etmol
Dani wasted 100 Dollars yesterday
"Danny wasted 100 Dollars yesterday"

In contrast to the verbs just mentioned, for some verbs distribution in time is not necessary. One example is *biçabeça* 'bubbled', as in (16):

(16) ha-marak biçabeça
the-soup bubbled
"The soup bubbled"

(16) can be naturally uttered in a situation where several bubbles appeared in the soup one after another, but, crucially, also in a situation where all of the sudden lots of bubbles appeared simultaneously, and then the fire was turned off, so no more bubbles appeared anymore. We can

[14] But one could use the present, imperfective form *ha-berez metaftef* ("The pipe is dripping / drips"), if there is reason to think that this 'falling drops' event is going to continue. This is one of the reasons for using only the past tense forms of the verbs in this paper, whose default semantics is perfective (see Boneh & Doron 2008).
[15] In addition, the verb has another semantic component, involving careless, or unjustified spending of the money, which will be discussed below.

characterize the subevents in this last case as distributed in space, since the spatial locations of the simultaneously-appearing bubbles do not overlap.

There are some verbs which necessarily involve distribution in space, but not necessarily in time, for example *picpec* ('shattered, broke into small pieces'), *livlev* ('bloomed'), *dirder (avanim)'* ('rolled down (stones))' and the more rare *xitxet* ('made holes') or *kiskes* ('disintegrated something in one's mouth to small pieces'). (17), for example, involves several leaves coming out or sprouting. A situation where a single leaf appeared on a tree is not enough to make someone utter (17):[16]

(17) ha-ec livlev
the-tree bloomed
"The tree bloomed"

One last interesting example illustrating different types of 'distribution' is *difdef* ('turned pages' 'leaved through (a book)'). A single event of turning one page in a book is not enough for a felicitous utterance of (18). That is, we really need a 'plural' event of turning pages:

(18) dani difdef ba-sefer
Danny leaved though / turned pages in-the-book
" Danny leafed though / turned pages in the book"

But notice that neither would (18) be considered natural if (a) Danny turned one and the same page again and again, nor if (b) he turned a bunch of pages together only once. For this verb, then, we really seem to need a plural event, where the subevents are both distributed in time, and involve turning more than one page, which can be considered distribution in space. A similar verb in this sense is *kivkev* ('drew a dotted line'), whose subevents necessarily have both non-overlapping running times and locations.

One may want to analyze such verbs as involving non-overlapping *participants* of the subevents, instead of non-overlapping spatial locations. But this would be wrong: For example, the bubbles, the leaves and the pages are not the thematic participants of the bubbling, the blooming and the 'leafing through' events, respectively, (as opposed to the soup, the tree and the book, which are). Spatial distribution, then, is a better solution. The examples illustrating the distribution in space and in time readings are now summarized in table #1:[17]

[16] Again, as in footnote #14, the sentence is appropriate in this scenario if changed to the present tense.
[17] I deal with the (im)possibility of distribution along the participants dimension with the QRR verbs in section 3.4.1.

Table # 1: Examples of QRR verbs expressing distribution in space and in time:

Dimension of distribution	**Examples**
Necessary distribution in time	*rixre'ax* ('sniffed') , *liklek* ('licked repeatedly'), *hivhev* ('flickered'), *tiftef* ('dripped'), *bizbez* ('wasted')
Necessary distribution in space	*picpec* ('shattered'), *livlev* ('bloomed'), *dirder (*'rolled down'), *gilgel* ('rolled'), *xitxet* ('made holes'), *kiskes* ('disintegrated something in one's mouth to small pieces')
Necessary distribution in *both* space and time	*difdef* ('turned pages'), *kivkev* ('drew a dotted line')
Distribution in space or in time (or in both)	biçabeça ('bubbled')

These examples, then, provide an illustration of one advantage of characterizing the relevant verbs as pluractional (as captured in e.g. Cusic and Lasersohn) , rather than as 'repetitive', 'durative' or 'iterative'. 'Repetition', 'duration' or 'iteration' alone would not be able to account for the potential 'simultaneous' reading of (16), and the fact that different pages are necessarily involved in the event in (18). Put in other words, the fact that some QRR verbs do not express distribution in time, but rather in space, can be naturally captured by using pluractionality, rather than 'repetition', since, unlike the latter term, which is limited to the temporal dimension only, the former is more flexible in allowing distribution in other dimensions.

A second advantage of the pluractionality-based analysis lies in the striking similarity between the meanings expressed by many of the QRR verbs, and typical meanings of pluractional verbs reported for many languages, e.g. those in Cusic's relative measure parameters.[18]

For example, many reduplicated verbs mentioned above seem to involve repetition of 'small' or short subevents, and thus naturally correspond to Cusic's diminutive reading, like *rixre'ax* ('sniffed'), involving very short smelling subevents, *liklek* ('licked, 'lapped up'), involving short licking events, and similarly *rifref* ('fluttered, flapped'), *nicnec* ('flickered'), *gimgem* ('stuttered'), *xilxel* ('diffused, flew'), *tiktek* ('ticked'), *digdeg* ('tickled') and *kivkev* ('drew a dotted line').

In some cases, though, the 'diminution' can apply to the whole event, and not necessarily to its subparts. One example is *nimnem* ('dosed, took short naps') which can either denote an event of sleeping for short periods of time and waking up several times (where diminution applies to the subparts), or a continuous event of light and short sleep (where diminution applies to the whole event). Another example is *hirher* which is understood as a light or a short thinking event. These

[18] Cusic's informal and intuitive labels are not used here for a precise analysis of the QRR verbs, but rather for pointing out the similarity between this verb class and pluractional verbs cross-linguistically. See section 3.4 for a more precise analysis.

two readings can be characterized along Cusic's tentative reading ("the action is performed half-heartedly or with less effort than expected" p. 82-3). The tentative reading can also be used to characterize *çilçel* ('browsed, turned pages'), which is similar to *difdef*, discussed above, but has an additional component where turning the pages is done with not much attention, or indeed 'half heartedly'. Similarly, *bizbez* ('wasted') discussed above involves not only spending money in several phases, but an additional component where the money is spent in a careless way, or without much attention. It can thus be also characterized as 'tentative'.

A related group of verbs, seen in (19), seems to correspond to Cusic's incassative reading:[19]

(19) *birber* ('gibbered', 'chattered'), *zipzep* ('changed channels aimlessly') *nišneš* ('snacked on') *pitpet* ('chattered'), *kiškeš* ('scribbled', 'rustled', 'gibbered') *zigzeg* ('zigzagged'), *tirter* ('chattered', 'gibbered', 'hassled'), *dišdeš* ('trudged'), *zimzem* and *himhem* ('hummed'), *limlem* ('mumbled'), *milmel* ('mumbled',' babbled'), *gimgem* ('stuttered' 'stammered'), *kirker* ('pranced')

Cusic characterized the incassative reading as denoting "merely an aimless or undirected activity" (p. 83-84), as in the Zoque *witwitnay* 'to walk aimlessly'. This component seems indeed to be present, at least potentially, in the semantics of the verbs in (19). Similar to the Zoque example, the verbs *zigzeg* and *dišdeš* can mean 'walked aimlessly', (though the latter may also relate to the physical quality of walking and denote a heavy and uncertain kind of walking). In addition to 'aimless walking' we can also have 'aimless talking', as in *birber* and *pitpet* where the agent talks for the sake of talking only, and / or to produce insignificant or already known pieces of information. More examples are *zipzep*, which naturally denotes an undirected or 'aimless' event of repeatedly changing channels (on TV), *kirker* ('pranced', 'jumped again and again with joy'), which can be taken to denote an 'aimless' or 'undirected' dancing activity, and *nišneš*, which denotes a repetitive event of eating small amounts of food in an 'aimless' way.

For some verbs the incassative reading is secondary or involves a metaphorical expansion. Two examples are *tirter* and *kiškeš* ('rattled'), which are originally onomatopoeic words describing repetitive sounds. Both these verbs, though, can also denote incassative speech (similar to *birber*). In addition, *kiškeš* can mean 'scribbled', namely an undirected or aimless drawing, and *tirter* can also denote a harassing or a hassling event, typically one where someone is moved or ordered to do something repeatedly and aimlessly. Similarly, *milmel* and *limlem* 'babbled, mumbled' and *gimgem* ('stammered') have potential incassative readings expressing unclear, hesitated and undirected

[19] In section 4 below I make a preliminary unified characterization of the incassative and the diminutive readings.

speech. The verbs *himhem* and *zimzem* ('hummed') originally seem to relate to the physical quality of sound or speech, but can potentially also express undirected or aimless singing.

The following table summarizes some of these manifestations of the incassative reading:

Table # 2: Examples of QRR verbs manifesting the incassative reading:

The type of 'aimless activity' expressed by the verb	**Examples**
'aimless talking'	*birber , kiškeš, pitpet, tirter* ('chattered', 'gibbered'), *milmel, limlem* ('mumbled')
'aimless walking'	*dišdeš* ('trudged'), *zigzeg* ('zigzagged')
'aimless singing'	*zimzem, himhem*, ('hummed')
'aimless drawing'	*kiškeš* ('scribbled')
'aimless dancing'	*kirker* ('pranced')
'aimless eating'	*nišneš* ('snacked on')
'aimless changing channels'	*zipzep* ('changed channels')

Finally, a close examination of the group of reduplicated semelfactive verbs, exemplified in (20), shows that most of them also manifest one of the readings in Cusic's relative measure parameter:[20]

(20) *hinhen* ('nodded', 'shook'), *nidned* ('swung'), *niçaneça* ('shook', 'moved here and there'), *nifnef* ('waved'), *çifçef , micmec* ('blinked'), *kiškeš (bi-znavo)* ('wagged (its tail)'), *nicnec* ('glittered') *, šikšek* ('rustled'), *hivhev* ('flickered')

Like their counterparts in English (see e.g. Rothstein 2004), these verbs are systematically ambiguous between an activity reading, which is salient when the predicate combines with *'be-mešex x'* ('for x time', as in (21)), and a semelfactive, 'single event' reading, found when they combine with *be- x* ('*at* x time', as in (22)):

(21) Dani çifçef be-mešex šaloS dakot
Danny blinked in-length three minutes
"Danny blinked for three minutes"

(22) dani çifçef be-arba
Danny blinked at-four
"Danny blinked at four'

From the point of view of pluractionality, there seems to be an asymmetry between these two readings. Analyzing the activity reading of such verbs as pluractional seems quite natural, (see e.g. Wood 2007 for an analysis), since on this reading they express repetitions of short events, namely

[20] Notice, though, that some classical examples of semelfactives do not have the reduplicated form, but can appear in other forms or templates e.g. *hištaçel* ('coughed'), *baçat* ('kicked') and *nakaš* ('knocked').

distribution in time. In contrast, such an analysis does not seem to be appropriate for the semelfactive reading, which is often assumed to express short or even single event types. Smith 1991, for example, argues that on the 'single event' reading these verbs are very similar to achievements in being associated with single and instantaneous events.

A closer look at the 'single event' reading of the Hebrew QRR verbs, however, may nonetheless allow us to characterize it as involving pluractionality. Notice, first, that Rothstein 2004 argues, contra Smith 1991, that even under the 'single event' reading, semelfactive verbs do not denote punctual events (like events denoted by achievements), but events which have internal structure, albeit very short events:

> "…In contrast [to achievements], semelfactive predicates cannot denote (near)-instantaneous events, because the events in their denotation have internal structure. Events in the denotation of *jump, flap a wing, kick* and so on, have trajectories, and consist of a series of movements which must occur as part of the event. A wink involves closing an eye and opening it again, flapping a wing involves lowering the wing and raising it, kicking a door involves moving one's foot with force so as to bring it in contact with the door, and so on" (p. 185)

Examining the Hebrew QRR verbs in (20) shows that Rothstein's observation holds for them too. Moreover, not only do the verbs in (20) have internal structure, but this structure is of a very specific sort: all of them express repetitions, and in all of them the number of repeated subevents is precisely two. For many of them the two subevents consist of movements in space in opposite directions. For example, on its 'single event' reading the event denoted by *hinhen* ('nodded') is made of exactly two subevents of moving one's head vertically in two opposite directions (i.e. down and up). If someone moves her head vertically two times, but in the same direction (i.e. two times down), this is not considered nodding. Similarly, *çifçef* and *micmec* 'blinked' involves closing and opening the eyes, *kiškeš (ba-zanav)* ('wagged its tail') has to do with two opposite horizontal movements of a tail, and *tiltel, niçaneça* and *nifnef* ('shook', 'moved in two directions' and 'waved', respectively) denote two opposite movements along a spatial axis (which is not specified as horizontal or vertical).

These observations seem to closely match Cusic's 'reversative' reading. However, the similarity is not complete. Cusic proposed that this reading "usually concerns verbs of motion and indicates return by the original agent along a path to some point of origin" (p. 91). In our case, though, it is not the 'original agent' which returns along a path, but rather a part of that agent. (E.g. in (22) it is Danny's eyelids which can be said to 'return along a path'). In addition, the reversative reading does not seem to cover the verbs *hivhev* ('flickered') and *nicnec* ('glittered'), which do not involve movement in space, but only a state (of having light) being 'on' and 'off'.

Perhaps a better candidate, then, is Cusic's 'alternative' reading, which according to him involves "two distinct actions, one a mirror-image of the other (which) are performed by the same agent. There are pairs of self-cancelling acts, although there are no necessary restrictions on the number of such pairs" (p.90). First, the fact that this characterization is not restricted to movements in space allows it to apply to *hivhev* ('flickered') and *nicnec* ('glittered') as well. Second, in this reading the agent is not required to 'return along the same path'. Indeed all these verbs can be characterized as involving exactly two events, and one is a mirror image of the second one.

What is less clear, though, is whether the subevents involved, e.g. closing and opening an eyelid, or raising and lowering a wing, can be characterized as 'two distinct actions', as in Cusic's characterization. This question is not easy to answer, as Cusic does not give any precise or formal definition of what can and what cannot count as a 'distinct action'. At this stage, then, let me treat these verbs as similar to alternative, or as 'alternative-like'. I will return to this point in section 3.4.5.

Finally, notice that there are also examples of non-semelfactive QRR verb which seem to express an 'alternative like' reading, namely *tite* ('swept (the floor')), and *šifšef* ('rubbed' 'scrubbed'), which involve repeated double subevents of moving a broom or a sponge back and forth.

The various 'alternative-like' QRR verbs are summarized in table #3:

Table # 3 QRR verbs expressing 'alternative-like' readings:

Double subevents, which are 'mirror-images' of each other, consisting of ...	**Examples**
movements along a horizontal axis	*Nidned* ('swung'), *niçaneça* ('shook') , *kiškeš (bi-znavo)* ('wagged (its tail)'), *tite* ('swept (the floor)'), *šifšef* ('rubbed')
movements along a vertical axis	*hinhen* ('nodded'), *çifçef* , *micmec* ('blinked')
movements along an unspecified axis	*nifnef* ('waved'), *šikšek* ('shook')
states (of having light) being 'on' and 'off'	*nicnec*, *hivhev* ('flickered')

We have seen, then, that many of the QRR verbs in Hebrew express meanings which are identical or similar to typical pluractional meanings cross-linguistically. As noted in section 1 above, however, there are also verbs in the QRR class (about 20%) whose meanings do not seem to correspond to any of the typical pluractional meanings, such as *lixlex* ('littered, made dirty'), *cimcem* ('decreased, reduced'), *bicbec* ('sprouted, peeped out'), and *pikpek* ('doubted'). The existence of such verbs is completely unexplained if we use 'repetition', or 'iteration' as our only characterization of this verb class. On the other hand, if we use 'pluractionality', the result seems less devastating: As mentioned in section 2, there are many reports in the literature on verbs with typical pluractional

markers, which semantically do not seem to involve pluralization in any clear sense. Such readings are sometimes treated as 'idiomatic', and are usually ignored in the formal analyses of the pluractional markers under consideration. Going over the literature, however, it is clear that the existence of such readings, along with the more typical and well understood readings is a rather common phenomenon. Integrating this phenomenon into a unified theory of pluractionals has not been done so far in the cross-linguistic or semantic literature on pluractionality, and attempting to propose such a unified theory is beyond the scope of this paper. It may well be that this general phenomenon should be attributed to the fact that pluractional morphemes are derivational (see e.g. Lasersohn 1995). I come back to these questions in section 4.

What is important at this point, however, is that the existence of verbs with non typical pluractional readings, though not explained as of yet, does not risk the characterization of the QRR verb class as pluractional, but, given the cross-linguistic research, is, in fact, quite expected.

3.3 A note on the frequent absence of simplex counterparts of the 'reduplicated' forms

We have seen that the QRR verb class in Hebrew shares many of the semantic characteristics of pluractional verbs cross-linguistically. Since morphologically reduplication is one of the most common markers of pluractionality, this seems to further support the pluractional-based analysis.

In section 1, however, we saw that only some members in the QRR class are really reduplications of existing roots. More specifically, we saw that most quadrilateral roots in this class do not seem to have existing roots that they reduplicate, either because no existing simple root is in any reasonable sense semantically related to the quadrilateral one, or because no morphologically similar simple root seems to exist at all. This picture is different from what emerges from cross-linguistic studies of pluractionality, where the pluractional verbs seem to be quite easily analyzable, and can be matched with their simplex counterparts in a systematic manner.

Note, though, that pluractional verbs with no simplex counterparts are not unheard of. Wood 2007, for example, mentions that the pluractional verb ***kot****koti'r* in Yurok (meaning 'to hop up and down'), does not have any non-reduplicated counterpart. Newman 1990 uses the term 'frozen pluractionals' to describe a similar phenomenon in Hausa, but assumes that such cases indicate the presence of a morphological process which was active in the past. This type of explanation may apply to some of the Hebrew data as well.

Another potential explanation may focus on the general derivational nature of pluractional morphology. Derivational morphology is often characterized by having forms with no simplex counterparts, in addition to real derived forms. Anderson 1992, for example, explicitly takes this

phenomenon to indicate that, in addition to forming new words from existing bases, another function of Word Formation Rules is to

> parse existing elements of the lexicon, relating (to a greater or a lesser degree) the form and meaning of a given word to the existence of other words with their own form and meaning. In the limit, they may not relate an analyzed word to any other word at all, but merely record its conformity in phonology, syntax and semantics with other words in the range class of the function formalized or expressed by the Word Formation Rule (p. 194).

Anderson's characterization seems to suit many cases of pluractional verbs, where along the systematic compositional derivation of complex words from simplex bases we also find some 'frozen pluractionals'. It is not clear, however, to what extent this general mechanism is enough to account for the situation with the Hebrew QRR class, where the verbs which have, or even had, simple bases seems to constitute the minority, namely about 30% of this verb class.

A promising synchronic approach to pluractionals with few simplex counterparts, proposed in Tovena & Kihm 2008, may be more suitable for the Hebrew case. Tovena and Kihm discuss a class of pluractional verbs in Italian and French which have special endings, and which semantically express multiplicity of subevents with a diminutive 'nuance'. Some of these verbs have simplex verbal counterparts, like the Italian *mordicchiare* and the French *mordiller* (both mean 'nibble'), which have the simplex counterparts *mordere* and *mordre* 'bite'. Other examples are the Italian *canticchiare* 'hum' (vs. *cantare* 'sing'), and *dormicchiare* 'slumber' (vs. *dormire* 'sleep'). In some other cases, as in the Hebrew case, the pluractional verbs seem to be derived from nouns rather than from verbs (like *boursicoter* from *bourse* 'purse, stock exchange', or *grappiller* from *grappe* 'bunch'). Crucially, however, there are many pluractionals with no simplex counterparts at all:

> Many verbs of this class, however, showing the same meaning and the same endings, stand on their own, either because the simplex counterpart does not exist or because it cannot be semantically related. Examples of the former state of affairs are (the Italian) *balbettare* 'stammer' and (the French) *boursicoter* 'play the Stock Exchange in a petty way', as neither **balbare* nor **bourser* are actual words. In the case of (the Italian) *volteggiare* 'fly about' and (the French) *barbouiller* 'daub', on the other hand, there are the simplexes *voltare* and *barber*, but they mean 'turn about' and 'bore' respectively. (p. 2).

Given the existence of so many verbs of this type, Tovena & Kihm argue, these special endings cannot be analyzed as productive suffixes. On the other hand, given the pluractional meaning associated with their presence, neither can they be seen as a mere integral part of each of these verbs either. Tovena & Kihm thus assume that such endings are "phonological strings without a meaning, but inducing meaning effects related to their phonic substance...(in that their) very sound draws native speakers … to assign a certain interpretation to the items that include them.

Pluractionality is thus a feature of the whole form, flagged by the phonetic form of the ending" (p. 5).[21]

The situation described in Tovena & Kihm for French and Italian is strikingly similar to the one described above for the Hebrew QRR class. We can thus follow their approach, and analyze this Hebrew verb class in a similar fashion. Although the morphological marking of the Hebrew verbs is not the presence of 'endings', but the reduplicated form, we can say that here too the very presence of this form induces the pluractional interpretation of the verb class.

One last point in Tovena & Kihm's discussion seems relevant to our case. On the basis of various semantic properties of the Italian and French verbs under consideration, Tovena & Kihm conclude that these verbs express *event internal pluractionality*, denoting a groupification of plurality of phases (see section 2.4 above). They suggest that this semantic property may be systematically related to the fact that the morphological marking on these verbs is not an independent affix, but is part of the word. Specifically, they suggest that

> the reason why plurality applies to phases rather than to the event may well be that event internal pluractionality… is expressed by words, simple words like English *nibble*, *flutter*, etc., or possibly more complex words like *mordicchiare* and *mordiller*. This suggests that, at least in these languages, pluractionality expressed in the word only accesses the level of the phase (p.1)

The validity of this proposal is not clear yet. In particular, further research should examine whether there is indeed a cross-linguistic correlation between the semantics of pluractionality involved (event internal or event external one), and the 'simple', or compositional morphology of the relevant verbs, respectively.

If this proposal is on the right track, however, then the observation that the morphological status of the Hebrew QRR class is strikingly similar to the Italian and French ones discussed in Tovena & Kihm, may lead us to hypothesize that semantically, the Hebrew verbs express event internal pluractionality as well. In the next section I argue that this hypothesis is, in fact, borne out.

3.4 The pluractional verbs in the QRR class express event internal pluractionality

In the previous sections we have established that the QRR class in Hebrew is associated with pluractionality. The purpose of this section is to argue for a more specific claim, namely that the

[21] Tovena & Kihm compare the situation with the French endings to the */gl/* and /sl/ clusters in the English *slip, slide, slither, slobber,* etc., or *glimmer, glint, glitter, glow*. However, the latter have no simplex bases at all, whereas Tovena & Kihm's report mentions a number of verbs with simplex forms in French. The same situation holds in Hebrew. Perhaps a better analogy, then, is the *–le* verbal cluster in English, where some of the verbs (e.g. *crinkle, dazzle, sparkle, suckle, dribble, paddle, prattle, snuffle*) have simplex bases, while others (*babble, giggle, gurgle, hustle, shuffle, sniggle, struggle, whistle*) do not (see e.g. Marchand 1969, p. 322-3). As seen in the glosses above, several such *–le* verbs are in fact natural translations of some of the QRR verbs in Hebrew (e.g. *rattle, tickle, babble, gurgle, bubble, rustle, trample*, etc.).

kind of pluractionality involved is event internal pluractionality in the sense of Woods 2007 and Tovena & Kihm 2008. I will now present five pieces of data supporting this claim.

3.4.1 No distributivity among participants. As noted in Wood and in Tovena & Kihm, event internal pluractionals do not express distributivity over participants. Examining the QRR Hebrew class under consideration seems to be compatible with this picture. In section 3.2 we saw that some of the QRR verbs can express distributivity in time, like *nifnef* ('waved') or *tiftef* ('dripped'), some express distributivity in space, like *livlev* ('bloomed') and potentially *biçabeça* ('bubbled'), and some express distributivity along both the time and space dimensions, like *difdef* ('turned pages') and *kivkev* ('drew a dotted line'). However, none of these verbs expresses distributivity along the thematic participants of the subevents. Consider, for example, the sentences in (23)-(25):

(23) rina ve-yosi çifçafu
Rina and-Yosi blinked$_{ms.pl}$
"Rina and Yosi blinked"

(24) dani, yael ve-sara rixrexu et ha-calaxat
Danny Yael and-Sara sniffed$_{ms.\ pl.}$ at the plate
"Danny, Yael and Sara sniffed the plate"

(25) dani rixre'ax harbe calaxot
Danny sniffed many plates
"Danny sniffed many plates"

For (23) to be true and felicitous, it is not enough that Rina closed her eyes and Yosi opened his eyes. Instead, both individuals have to perform a whole event of blinking, that is, each of them has to close and open his / her own eyes (at least once). Similarly (24) cannot be true if Danny, Yael and Sara each smelled the plate once, one after the other. Each of the individuals should be the agent of a group of smelling events (which have to be rather quick and short). In both cases, then, the phases, or subevents of the blinking and sniffing events cannot be distributed between the agents.

In (25) the plural 'participant' is not the agent of the pluractional event, but its theme. Here too we see that the subevents cannot be distributed over the different plates. (25) requires that Danny sniffed, that is, repeatedly (and quickly) smelled, each of the many plates. A situation where each of the plates was smelled only once is not enough to make this sentence true, unless Danny sniffed at a pile of plates, in which case the plates are seen as a group, or a collective, i.e. as a singular theme of the sniffing event.

3.4.2 Temporal proximity: Wood 2007 notes that the subevents (phases) with event internal pluractionals should be temporally close to each other. In her words, the subevents should be "essentially continuous or have minimal temporal separation" (p. 90). (This generalization already appears in Cusic 1981, who suggested that the level of temporal 'connectedness' of event internal pluractionals is high). The interpretation of the Hebrew QRR verbs seem to be compatible with this generalization. Consider (26) and (27):

(26) ha-panas hivhev be-mešex šaloS dakot
The-lamp flickered in-length three minutes
"The lamp flickered for three minutes"

(27) ha-panas hivhev kol ha-layla
The-lamp flickered all the-night
"The lamp flickered all night long"

A situation which can make (26) true, for example, is one where starting at 1.00 and finishing at 1.03 the lamp went off and on ten times. But, ten subevents of being on and off are not yet enough to make (27) true. For example, one would not tend to use (27) to describe a situation where between 9.00 p.m. and 7.00 a.m. the lamp went off ten times once every hour for two seconds. What is required here, then, is not only that there are multiple subevents, but also that they are temporally 'connected', i.e. close to each other.

3.4.3 Potential telicity Some of the QRR verbs in Hebrew denote telic events. This is indicated by their compatibility with the adverbial *be-Štey dakot* "in two minutes", in (29). As seen in (28), this adverbial is similar to its English counterpart 'in two minutes' in that it can naturally modify telic events (like "read the letter"), but (in the usual circumstances) not atelic ones (like "walked"):[22]

(28) a. karati ʔet ha-mixtav be-štey dakot
I-read acc. the-letter in-two minutes
"I read the letter in two minutes"

b. #halaxti be-štey dakot
I-walked in-two minutes
"I walked in two minutes"

(29) *picpacti et ha-delet be-štey dakot* ("I shattered the door in two minutes") */ titeti et ha-xeder be-štey dakot* ("I swept the room in two minutes") */ ha-xatul liklek et ha-*

[22] The only way to get a felicitous reading for (28b) is to assume a context where a telic point combining with the activity is contextually salient. (*How much time did it take you to walk to the store ? – I walked in two minutes*) (See the discussion of example # 32 below).

xalav be-štey dakot ("The cat lapped up the milk in two minutes") */ bizbazti ʔesrim dolar be-* štey *dakot* ("I wasted twenty dollars in two minutes")

In section 2.4 we noticed that Lasersohn and van Geenhoven predict that pluractional verbs will be atelic. In contrast, Wood's (as well as Tovena & Kihm's) analysis of event internal pluractionality is compatible with the observation that event internal pluractional verbs can denote telic events. The telicity of the verbs in (29), then, supports the characterization of the QRR verb class as expressing event internal pluractionality along the lines of Wood and Tovena and Kihm.

3.4.4 The 'incassative' reading of some QRR verbs. In section 3.2 we noticed that a number of the QRR verbs express 'undirected' events. I repeat here the examples discussed above, together with suggested 'directed' counterparts:[23]

Table # 4: QRR verbs manifesting the incassative reading with suggested 'directed' counterparts:

The type of 'aimless activity' expressed by the verb	**Examples**	**Suggested 'directed' counterparts**
'aimless talking'	*birber, kiškeš, pitpet, tirter, milmel, limlem,*	Talking about a certain issue, clarifying a certain point
'aimless walking'	*dišdeš*, *zigzeg*	Walking to the store
'aimless singing'	*zimzem, himhem*	Singing this song
'aimless drawing'	*kiškeš*	Drawing this tree, drawing Mary
'aimless dancing'	*kirker*	Dancing this tango
'aimless eating'	*nišneš*	Eating this meal, eating an apple
'aimless changing channels'	*Zipzep*	Changing channels in order to find a specific channel.

In section 3.2 we used the observations about the 'undirected' or 'incassative' readings of the Hebrew verbs to support the claim that the QRR verb class in Hebrew can be characterized as pluractional. We can now more specifically propose that these interpretations support the characterization of this verb class as expressing event internal pluractionality, in the sense of Wood 2007.

[23] Notice that the difference between the 'undirected' and the 'directed' predicates does not correspond to the intransitive / transitive distinction, respectively. First, some of the 'directed' predicates can be still considered intransitive (e.g. *walking to the store*). Here we have a quantized path, but not an NP argument (see e.g. Krifka 1998 and Rothstein 2004 for the relationship between having quantized paths or arguments and telicity). Second, some of the undirected predicates (e.g. *zimzem* 'hummed') can be used transitively (*zimzem et ha-Sir* "hummed this song"), but will still have a possible 'undirected' reading, where e.g. only parts of the song are hummed, and the song is never completed. (Notice, though, that in addition, in such a case the verb can also get a 'directed' reading, and the effect of reduplication has to be 'tentative' and do more with the acoustical properties of the humming vs. singing, or with the level of attention paid to the melody and lyrics etc. This last reading can be classified as part of the diminutive effect often associated with this kind of reduplication, as discussed in section 4 below).

Remember that according to Wood, one of the constraints on event internal pluractional markers is (11), repeated here as (30):

(30) The phases (subevents) of an event internal pluractional event cannot be complex (where 'a complex event' means: 'has both a process and a culmination phase')

The basis for this constraint is Wood's observation that event internal pluractional markers cannot combine with accomplishments, which are generally assumed to involve both a process (corresponding to an activity) and a culmination. Crucially, Wood shows that in cases where such markers *do* combine with accomplishments, the culmination part of the accomplishment event is dropped, and the resulting reading is conative. In Rothstein's 2004 terms, in such cases we may assume that we have an aspectual type shifting operation which turns an accomplishment into an activity. Specifically, the resulting activity predicate corresponds to the activity part of the accomplishment. This is possible, since part of the lexical meaning of an accomplishment is to "give information about what characteristics its activity subevent has" (Rothstein, p. 48).

On the surface, the situation with the Hebrew QRR verbs with incassative readings is different from what is described by Wood, since the semantic correlates of these verbs are activities (like *ran, sang*, *danced* etc.) and not accomplishments. A closer look, however, shows that we can take the incassative reading of the QRR Hebrew verbs in table #4 to serve a similar function as Wood's conative reading. This is because, under the right circumstances, such activities can potentially get accomplishment readings. For example, Rothstein 2004 (p. 26) points out that although the adverbial 'in x time' is constrained to combine with telic predicates, it can sometimes be felicitous with activities, such as *run*, as in (31), when there is a specific distance which is contextually salient:

(31) John ran in an hour (*acceptable with an understood specified distance.*)

In a similar way, the verbs *walk, sing, eat, dance, draw* and *talk*, although basically activities, can get an accomplishment, telic reading, once a certain quantized path or argument is contextually salient (as in the 'directed counterparts' in table # 4). Crucially, however, once an 'incassative' component is added to such verbs, this potential accomplishment reading is not available anymore, since the whole point of this component is to indicate that the event is 'aimless', and not directed towards a certain goal. Put in other words, the reduplication in this case does not turn an accomplishment into an activity, but makes sure that an activity will not get an accomplishment interpretation.

We can thus propose that the incassative component in the QRR verbs in table #4 turns the subevents of the pluractional event from potentially accomplishment events into unambiguously activity events, with no culmination. In Wood's terminology, its effect is to turn potentially

'complex' subevents, which are disallowed with event internal pluractionality, into noncomplex. If this proposal is on the right track, then the presence of the incassative QRR verbs in Hebrew might be seen as further supporting the claim that this verb class expresses event internal pluractionality.

3.4.5 A more unified analysis of QRR semelfactives. In section 3.2 above we saw that many QRR semelfactive verbs can be analyzed as pluractionals even on their 'single event' reading, since they involve events made of exactly two short 'mirror-imaged' subevents, similar to verbs expressing Cusic's 'alternative' reading. In addition, of course, these verbs can also have an activity reading, where they denote repetitions of such 'double' movements, and which can be naturally analyzed as pluractional, involving distribution in time, as suggested in e.g. Wood 2007. The two readings of these verbs are exemplified in (32), which can either mean that the dog moved its tail twice (once to the left and once to the right), or that there was one event where it repeatedly wagged his tail:

(32) ha-kelev kiškeš ba-zanav paçam ʔaxat
The-dog wagged in-the-tail time one
"The dog wagged his tail once"

Notice, then, that on the activity reading of this verb, the subevents of the wagging event are themselves wagging events, i.e., $P=V$. In contrast, in the 'single event' reading, the subevents are not themselves wagging events, but rather single movements of the tail (to the left or to the right), i.e., $P\neq V$. The same seems to hold also for *'çifçef* ('blinked'), *tiltel* ('shook'), *nifnef* ('waved'), etc. Thus, given Lasersohn's definitions, we get event internal pluractionality in the single event reading (where $P\neq V$), and event external pluractionality in the 'activity' reading (where $P=V$).

Given the fact that these two readings are systematically expressed by the same lexical item, however, it would be better if we could arrive at a unified characterization of these verbs. Such a unified characterization is possible if we follow Wood's characterization of event internal pluractionals. According to her, the relevant criterion does not concern whether the pluractional verb and its subevents are of the same type, but whether or not the resulting event is singular, i.e., whether the plurality of subevents undergoes an operation which turns them into a singularity.

The possibility that the activity reading of semelfactives yields a single event (and thus event internal pluractionality) gains independent theoretical support from Rothstein's 2008 approach to semelfactives, according to which this reading is the result of an S(ingular)-summing operation on the subevents, namely an operation which applies to a sum of events and yields a singular event

as a result.[24] According to Rothstein, for example, a repeated activity of e.g. blinking is not a plural predicate, but a singular one.[25]

As to the 'single event' reading of the Hebrew QRR semelfactives, which consists of two 'mirror imaged' subevents, this can also be analyzed as involving event internal pluractionality since here too we clearly end up with a single event. This is indicated, for example, by the fact that the two subevents involved in a blinking event (namely closing and opening the eyelid) cannot be distributed between two agents.

Notice, though, that this characterization may seem problematic given the strong similarity of the 'single event' reading of the QRR semelfactives to Cusic's alternative reading, discussed in section 2.2 above. This is because Cusic took this reading, as well as other readings involving a small or precise number of subevents (such as the duplicative and the reversative readings), to characterize event *external* pluractionals only.

There are two ways to approach this problem. First, as already observed above, it is not clear to what extent the relevant QRR can be characterized as involving two distinct actions, as required in Cusic. We can assume, then, that the QRR verbs express another reading, which is similar, but not identical to the alternative reading, and which can be characterized as 'an event internal alternative reading'.

Another possibility is to reject Cusic's view of the alternative (as well as the reversative and duplicative) readings as necessarily characterizing event external pluractionality only, on the grounds that this view is not independently motivated. There is no a priori reason why the number of the phases in event internal pluractionals should be constrained in such a way. In fact, Cusic

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[24] Rothstein 2008 defines S-summing for both individuals and events. In the domain of events the operation is defined as in (i):

(i) $S\text{-}sum_V$ (the S-sum operation in the verbal domain): $\forall e, e'\ P(e) \wedge P(e') \wedge R(e,e')$: $S\text{-}sum(e,e') \rightarrow P(\ S(e + e'))$
"For any two events e and e' in the denotation P which stand in the R relation, S-sumV applied to e and e' yields a singular event formed out of the sum of e and e' and which is also in the denotation of P".

The operation is very similar to Landman's groupification operation, used by Wood 2007 to capture event internal pluractionality. However, Landman's operation typically applies to events which are members of the same verbal predicate P (e.g. two events in the denotation of 'lift the piano'). In contrast, Rothstein's operation is meant to sum events which stand in a particular relation to each other. One such relation is temporal overlap, which, for example, allows summing a running event from 8 to 9 and a running event from 9 to 10 to a single running event (from 8 to 10). Another such relation is the T(ime)P(articipant)Connect (see Rothstein 2004), which can sum two events which have the same participant and the same running time, as in depictive predication. For example, Rothstein 2004 assumes that the interpretation of the depictive in (i) involves S-summing the events in the denotations of 'drive' and 'be drunk' to a single event, since the TPconnect relation holds between them:

(i) John drove the car drunk

[25] One may think that Wood's constraint in (30) above, requiring that event internal pluractionality does not apply to 'complex' events, may prevent semelfactives on their activity readings to be considered event internal pluractionals. This is because on this reading these verbs denote repetitions of events with internal structure (namely repetitions of the two (mirror-imaged) subevents). This is not the case, however, since Wood's notion of 'complex' in (30) does not relate to events with internal structure, but to accomplishment events, which have both an activity and a culmination phase. Wood's sort of 'complexity' does not characterize the 'single event' reading of semelfactives, involving the two 'mirror imaged' phases. Rather, following Rothstein 2004, these short events are analyzed as (short) activities.

himself says that "…*it happens* to be the case that in [internal] plurality the index of repetitions is usually considered to be large or uncountable" (p.78, my emphasis). Moreover, one of Cusic's own examples of an event internal pluractional verb is the reduplicated Klamath verb *petqpetqa* ('(he) blinks') (based on *petqp* ('close the eyes')). It seems, then, that such 'single event' readings of semelfactives can be indeed considered event internal pluractionals.

To conclude, another advantage of assuming that the QRR class in Hebrew expresses event internal pluractionality, in Wood's 2007 sense, is that it enables a unified treatment of QRR semelfactives verbs on both their readings, as well as a clear way to distinguish between them (depending on whether P=V or not).

4. General implications and open questions for the cross-linguistic study of pluractionality.

Until now we focused on a better understanding of the QRR verb class in Hebrew. The observations and insights above, however, also have some more general implications, and highlight several open questions, whose consideration can contribute to the cross-linguistic research of pluractionality.

First, the discussion above can be used to support certain theories of pluractionality over other, competing theories, in particular Wood's 2007 and Tovena & Kihm's 2008 view of event internal pluractionality over Lasersohn's 1995 one. In addition, the paper also provides support for Tovena & Kihm's observation that verbs expressing event internal pluractionality may be unanalyzable words which are nonetheless morphologically marked. Finally, the analysis of the incassative reading of some of the QRR verbs indirectly supports Wood's observations and analysis of the lexical aspect constraints on event internal pluractionality cross-linguistically.[26]

[26]A further interesting implication of the paper concerns the availability of multi-dimensional distributivity of pluractionals. In section 3.2, we saw that some reduplicated verbs, like *difdef* ('turned pages'), seem to be distributive along more than one dimension, i.e., in both space and time. Strictly speaking, this observation may be may seen as a problem for Lasersohn's 1995 definition, according to which the subevents of a pluractional event differ along a dimension given by a function *f,* which is defined as θ (thematic role), τ (running time) or K (spatio-temporal location). This potential problem is similar to a one raised in van Geenhoven 2004, who attempts to analyze cases where the meaning of one pluractional operation leads to distribution along both the participants and time dimensions, and to interactions between the two dimensions, depending on scope relationship. Van Geenhoven writes that in Lasersohn's definition "…the function *f* stands either for the temporal function τ, which picks out the time of an event, or for the participant function θ, which picks out the relevant participant of an event. However, to account for the scope effects we need a tool that can simultaneously distribute subevent times and subevent participants over the overall event time of an utterance". (p.174).

At least in our case, though, this problem can be quite easily solved by allowing subevents to have the non-overlap relation along more than one dimension. It does not seems to me that this would lead to any problem with other components in Lasersohn's definition. The potential multi-dimensional distributivity of pluractionals seems to be compatible with Faller's 2008 suggestions regarding pluractionality in Cuzco Quechea as well, according to which "…if non-overlap is required in one dimension, at least one dimension requires overlap" (p.15).

Faller's suggestion may seem similar to Tovena & Kihm's 2008 analysis of certain pluractional verbs in French as involving a mass cover role on the participant (e.g. the theme) of the verb, which allows parts of the theme to overlap

Second, some of the observations in the paper question existing views about pluractionality. One such view concerns the inherent relation between pluractionality and atelicity, argued for in van Geenhoven 2004, 2005. The discussion above pointed out, however, the incompatibility of this view with reports of telic pluractional verbs cross-linguistically. This incompatibility can be resolved if (a) we follow Wood and Tovena & Kihm's view of the difference between event internal and external pluractionality (as a difference between singular and plural events), and (b) we assume that atelicity is a property of event *external* pluractionality only.

Other observations in the paper question Cusic's 1981 generalization that event internal pluractionals cannot have any of the 'precise and small' readings of the relative measure parameter, e.g. the duplicative, alternative or reversative readings. Above we suggested that this view is not independently motivated and showed that some of the event internal pluractionals in Hebrew (as well as in Cusic's original report) seem to be semelfactives with an alternative-like readings.

Another generalization of Cusic was that event internal pluractionals can be temporally, but not spatially, distributed. In section 3.2 above, however, I discussed event internal pluractionals verbs like *biçabeça* ('bubbled') or *difdef* ('turned pages') which can, or even should, involve distribution in space. Here again, it seems that Cusic's original generalization is not independently motivated. It may be more correct to argue that the phases (subevents) in event internal pluractionality can be both spatially and temporally distributed as long as we get 'high connectedness' between the times and between the locations.

Finally, some of the implications of the present study highlight remaining questions for the research of pluractionality. One such question concerns the existence of verbs which are morphologically marked with typical pluractionality markers, but semantically do not seem to involve any pluralization of the event. As noted above, examining many reports of pluractional marking cross-linguistically, the existence of such verbs seems to be a common linguistic phenomenon. In this sense, the existence of such verbs in the QRR class in Hebrew, exemplified more fully in (33), does not seem to undermine the characterization of this class as pluractional. On the other hand, arriving at a unified characterization of all the verbs in the QRR class would definitely be preferable. No existing semantic theory of pluractionality can be of any help here, however, because none of them attempts to integrate this phenomenon into its definitions.

(e.g. it can allow a single part of a song to be sung twice). However, there are important differences between the two suggestions. First, Tovena & Kihm's suggestion is explicitly restricted to event internal pluractionals, while Faller's seems to apply to both event internal and event external ones. Second, Tovena & Kihm's proposal *allows* for an overlap, while Faller's one *requires* such an overlap (in at least one dimension). Finally, Tovena & Kihm relate to (potential) overlap in the participants dimension only, while the main point in Faller's proposal relates to interactions between the different dimensions (the temporal, spatial and participants dimensions).

(33) *zilzel* ('disrespected'), *pikpek* ('doubted'), *bilbel* ('confused'), *dixdex* ('depressed'), *dildel* ('weakened, impoverished'), *timtem* ('stupefied, made stupid'), *tišteš* ('blurred', 'made unclear', 'dazed'), *lixlex* (littered, made dirty'), *mismes* ('melted'), *mikmek* ('made rotten'), *sixsex* ('intrigued, instigated'), *çimçem* ('dimmed'), *çirçer* ('undermined'), *cimcem* ('reduced, minimized'), *kilkel* ('spoiled'), *kiçakeça* ('destroyed, ruined'), *tiçateça* ('decieved'), *fisfes* ('missed a target, blew it'), *ligleg* ('mocked'), *bicbec* ('peeped out', 'sprouted'), *šiçašeça* ('amused')

A close look at these 'exceptional' verbs, though, may point out a preliminary direction for a more unified picture, at least for the Hebrew data. The important observation here is that the range of meanings expressed by the verbs in (33) is not completely arbitrary or unrelated. Specifically, almost all these verbs seem to share a certain semantic component, which we can start characterizing as 'deteriorative'. Intuitively, a verb with a 'deteriorative' component denotes an event type which leads to a state which is perceived as being less good, less stable, less certain or even less large, than a presupposed state. More precisely, the effect of these verbs is to indicate that the resulting state is characterized with a lower degree along a certain dimension or scale, than a presupposed state.

Here are some examples: *çirçer* ('undermined'), as well as *kiçakeça* ('ruined'), presuppose a prior state which is some sense stable, and assert the existence of a resulting state which is less stable. A similar effect can be found with *bilbel* ('confused'), *timtem* ('made stupid') and *tišteš* ('blurred'), which seem to lead to a resulting cognitive or emotional state which is less clear, focused or organized than a presupposed prior state. *Dixdex* ('depressed') seems to lower a degree of emotional welfare. *Pikpek (*'doubted') presupposes some state where a certain view, claim, or theory has a certain degree of reliability, and the resulting state has a lower degree on such a scale. *Lixlex* ('made dirty') leads to a state which has a lower degree along the dimension clean-not clean. *Mikmek* ('made rotten') and *mismes* ('melted') seem to lower the degree of stability of physical objects (in two different ways). *Cimcem* ('reduced, minimized') indicates a lower degree of size, ç*imçem* ('dimmed, blurred') results in a state which is physically darker, or emotionally / cognitively less clear than the presupposed state, and *kilkel* ('spoiled') seems to more generally lower the degree of a presupposed state along some undefined dimension of 'good-not good'.

One could attribute the 'deteriorative' nature of the verbs in (33) to their reduplicated form, since reduplication is often associated with emotional evaluation. However, we are interested in whether this kind of semantic effect can be integrated into the more general picture of the QRR verbs as expressing event internal pluractionality.

This question is part of a more general question concerning the appropriate characterization of the morphological-semantic correlation with pluractional verbs. As noted above, the number and variety of readings associated with pluractionality cross-linguistically is very large. In this sense, pluractionality might look like a case of general polysemy, of the kind found with diminutive morphological markers. Jurafsky 1996 reviews cross-linguistic studies about the diminutive which, similarly to the reports about pluractional markers, describe both a wide variety of morphological devices, as well as a "seemingly unlimited", and sometimes even contradictory variety of meanings associated with it. Jurafsky suggests a 'core and extensions' approach to this polysemy, where it is treated as a 'redial category' consisting of "a central sense of prototype together with conceptual extensions" (p. 538). The extensions are linked to the central sense, (which in the case of the diminutive Jurafsky takes to be 'child'), by mechanisms like metaphorical extensions, transfers to different domains and inferences. The advantages of this approach, according to Jurafsky, is that (a) the existence of unrelated, and even contradicting meanings can be accounted for and (b) this is done without ending up with an abstract, vague and untestable characterizations of a single component shared by all meanings of the diminutive, as done in some 'abstractionist' theories.

In contrast to this approach, most modern semantic theories of pluractionality, like the ones described above, took what can be called 'a common denominator' approach, where the various readings expressed by pluractional are all instances of a single semantic operation, namely a pluralization of the event argument. The variability in readings is accounted for by attributing it to different ways of manifesting this operation (e.g. through non-overlap in run time, space time location, or thematic participants), as well as by allowing variability along other dimensions (e.g. the 'size' of the subevents). Unlike the 'abstractionist' approach described by Jurafsky, the theories reviewed above attempted to avoid vague and untestable characterizations of the 'common denominator', by using precise and formal representations.

However, as we have just seen, the formal semantics approach to pluractionality faces a problem raised by the existence of verbs which are morphologically, but not semantically pluractional, like the Hebrew QRR verbs in (33).

This situation can lead now to several potential directions. First, one can simply treat the existence of such verbs as lexicalized or idiomatic cases (as in Faller 2008). In this way, the existence of such verbs does not require any semantic analysis, and it can be attributed to the derivational nature of pluractional morphology. This, however, does not seem appropriate in the case of the Hebrew verbs in (33), which seem to share a common semantic component, and which constitute almost 20 % of this QRR verb class. Second, one can shift from the 'common denominator' to the 'core and extensions' approach, and claim that pluractionality should be in fact

treated as some sort of a radial category, with one central sense and many extensions, the deteriorative reading of the verbs in (33) being simply one such extension. Finally, one can nonetheless attempt to find a common component of the QRR verbs, covering both the verbs in (33), as well as the verbs with typical pluractional meanings discussed above.

A potential common component like this can be characterized as a certain kind of a diminution effect, or more precisely, as the operation which lowers a degree in a certain scale associated with the event, relative to another, salient degree.[27] As seen above, the QRR verbs with the more typical pluractional readings involve a notion of diminution. In fact, it is striking that none of the verbs in this class exhibits any of Cusic's 'increase' readings, like the augmentative reading. Instead we get the 'decrease' readings, where diminution seems to apply to the subevents of the pluractional verb (as in the 'diminutive' reading) or to the whole event (as in the 'tentative' one). Notice that if this direction is on the right track we may also take the incassative reading, found with some of these verbs, as expressing some sort of diminution, namely to lower a degree along a directed-nondirected event dimension, or (following Wood's reasoning with the conative reading), along the dimension of complex-noncomplex. This direction will follow Lasersohn's preliminary suggestion to capture the readings in Cusic's relative measure parameter using "measure functions on events yielding values based on size, degree of effort, effectiveness, etc." (p. 255). In general, then, with the QRR verbs with pluractional readings we get a degree on a scale associated with the event, which is lower than a contextually salient degree (e.g. the contextually salient normal running time, spatial length, amount of attention with which the action is performed, etc.). In a similar way the 'deteriorative' verbs in (33) involve lowering a degree on a certain scale associated with the event, relative to the degree of a presupposed event or state.

This kind of suggestion is clearly still preliminary, and needs further empirical verification and a better characterization and formalization of the relevant diminution effect which can apply to all predicates. There are, however, three potential supports for it. First, there are two verbs in the list in (33), namely *bicbec* ('sprouted') and *šiçašeça* ('amused'), which are neither pluractional in any way (do not involve plurality of the event), nor are they 'deteriorative'. Nonetheless, they can also be said to involve a low degree on a scale: *bicbec* has to do with an especially small portion of an object (typically a plant) which can be seen, i.e. it has to do with a low degree along the size scale. The verb *šiçašeça* involves an event type which is a milder version of e.g. *hicxik* ('made (someone) laugh'), i.e. involves a low degree, relative to another non-reduplicated verb. (Notice that *dixdex* ('depressed'), can be similarly considered a milder version of the non-reduplicated verb *dika*

[27] Thanks to Edit Doron for pointing out this direction to me.

('depressed'), and hence 'diminutive' in two ways: as lowering a degree relative to a degree associated with a corresponding non-reduplicated verb, and, in its 'deteriorative' reading, lowering a degree relative to a presupposed state).

A second kind of support is based on the observation that in Hebrew, reduplication seems to have the effect of diminution in the nonverbal domain as well, as has been shown in Graff 2002 for reduplication with nouns (as in (34)), and with adjectives, as in (35):[28]

(34) *xatul* 'cat' – *xataltul* 'kitten'
Kelev 'dog' - *klavlav* 'puppy'
safam 'mustache' – *sfamfam* 'little mustache'

(35) *šaxor* 'black' – *š*xarxar 'blackish'
šamen 'fat' –*šmanman* 'chubby'
çagol 'round' – *çagalgal* 'roundish'

In this case too, then, the effect of reduplication is lowering a certain degree (along the dimension of size, color, shape etc.). The general diminution effect found with the QRR verbs, both with the 'pluractional' and the 'deteriorative' ones, then, may be attributed to the fact that in Hebrew this effect is morphologically manifested through reduplication.

Finally, the idea that the QRR class expresses event *internal* pluractionality, where a single event is 'divided' or 'sliced' into subevents, seems potentially compatible with an operation of diminution. Indeed this semantic component has been repeatedly emphasized (by Wood 2007 and Tovena & Kihm 2008) as one of the key ingredients of event internal pluractionality.

5. Conclusion

The main goal of this paper was to examine the semantic effect of reduplication in the QRR verb class in modern Hebrew. I showed that the verbs in this class share many properties with pluractional verbs cross-linguistically, and that the pluractionality-based analysis of this verb class is more productive than its characterization as expressing 'iteration' or 'repetition', suggested in the past.

More specifically, I argued that the verbs in the QRR class express event internal pluractionality, in the original sense proposed by Cusic 1981, which was more formally captured in Wood 2007 and in Tovena & Kihm 2008 as involving a groupification operation on a plurality of subevents. In particular, it was observed that the reduplicated Hebrew verbs denote events which

[28] But see Bat El 2006 who claims that there are also many reduplicated forms which are semantically neutral.

are possibly telic, which can distribute over time and space, but not over participants, and whose subevents must be temporally close to each other. Empirically, these properties have been reported to characterize event internal pluractionals in a variety of languages. Theoretically, they are compatible with a view of such pluractionals as yielding grouped, singular events (following Wood's and Tovena & Kihm's view).

Two more indirect advantages of the event internal pluractionality analysis are (a) allowing a more unified analysis of the Hebrew reduplicated semelfactives on both their 'single event' and 'activity' reading, and (b) accounting for the existence of QRR verbs with an incassative (undirected and 'aimless') reading. In addition, the Hebrew reduplicated verbs were shown to be morphologically similar to pluractionals in French and Italian, which are often unanalyzable, simple words, and which were argued (by Tovena & Kihm 2008) to express event internal pluractionality as well. Further research, though, is needed in order to establish whether this suggested morphological-semantic correlation is generally valid.

In addition to a better understanding of this language specific verb class, the observations in the paper contribute to the cross-linguistic research of pluractionality, by (a) supporting certain theories over others (e.g. Wood's 2007 and Tovena & Kihm's 2008 view of event internal pluractionality, over Lasersohn's 1995 view), by (b) questioning existing views about pluractionality (e.g. van Geenhoven's 2004 claim that pluractionality inherently leads to atelicity, and some of Cusic's 1981 claims about event internal pluractional markers), and by (c) highlighting some of the open issues and unanswered questions that the study of pluractionality faces.

One such open question concerns the existence of forms which are morphologically marked as pluractionals, but which lack a pluractional semantics. A preliminary suggestion was made, characterizing the core semantic component with the reduplicated verbal class as a diminution operation, in which a degree on a scale associated with the event is considered lower than another, contextually salient, degree on this scale. Further research should examine whether this direction can be more precisely developed, and whether it can be applied to similar 'idiomatic' cases reported in the cross-linguistic literature on pluractionality.

Finally, the paper raises a number of questions and directions for comparative research in Afroasiatic and Semitic linguistics. One question is whether the pluractionality-based analysis of the QRR verb class can be extended to other reduplicated verbal classes in Hebrew, such as the *[c_1]i[c_2][c_3]e[c_3]* verb class (e.g., *cixkek* ('giggled') or *ʔišrer* ('ratify')), which seems to express repetition of short subevents as well. A close look at such verbs should clarify the characteristics of their (apparent) pluractionality, for example, whether it is event internal or external pluractionality, what kind of distributivity do such verbs express, etc.. In addition, the semantic properties of the

Hebrew reduplicated verbs examined above should be compared with parallel data in other Semitic and Afroasiatic languages. As noted above, pluractionality was reported to be a general property of the *piel* verb form in several such languages. Some of the reports cited by Greenberg 1991 and Newman 1990 clearly point to the existence of participant distributivity found in those pluractional verbs, and thus indicate that they express event external pluractionality (following Wood's 2007 and Tovena and Kihm's 2008 views, adopted above). It will be interesting to check whether the relevant templates in these languages also have subclasses which express event internal pluractionality, as seems to be the case in modern Hebrew.

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